

WHAT IS CLAIMED IS:

1. A stent and balloon catheter in combination comprising:  
a balloon catheter with a first and a second balloon, the  
second balloon overlaying the first balloon; and  
an expandable stent mounted over the first and second  
catheter balloons,  
wherein a burst pressure of the first balloon is less  
than a burst pressure of the second balloon a length of the  
second balloon is greater than a length of the stent and a  
length of the first balloon is less than the length of the  
stent.
2. A balloon catheter according to claim 1 wherein the burst  
pressure of the inner balloon is less than 10  
atmospheres.
3. A balloon catheter according to claim 2 wherein the burst  
pressure of the inner balloon is approximately 5  
atmospheres.
4. A balloon catheter according to claim 3 wherein the burst  
pressure of the outer balloon is greater than 10  
atmospheres.
5. A balloon catheter according to claim 1 wherein the burst  
pressure of the inner balloon is approximately 5  
atmospheres.
6. A balloon catheter according to claim 1 wherein the burst  
pressure of the outer balloon is greater than 10  
atmospheres.
7. A balloon catheter according to claim 3 wherein the outer  
balloon is formed of a non-compliant material.
8. A balloon catheter according to claim 7 wherein the inner  
balloon is formed of a non-compliant material.

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9. A balloon catheter according to claim 1 wherein the outer balloon is formed of a non-compliant material.
  10. A balloon catheter according to claim 1 wherein the inner balloon is formed of a non-compliant material.
  11. A balloon catheter according to claim 1 wherein the catheter shaft has a guidewire port located adjacent the balloons.
  12. The combination according to claim 1 wherein the burst pressure of the first balloon is at least 5 atmospheres less than the burst pressure of the second balloon.
  13. A method of implanting a stent comprising:  
providing a balloon catheter with an outer balloon and an inner balloon, the outer balloon overlaying the inner balloon a burst pressure of the inner balloon being substantially less than a burst pressure of the outer balloon, ;  
mounting a stent on the balloon catheter;  
delivering the balloon catheter and stent to a desired location in a vessel in a body;  
inflating the inner balloon to a pressure sufficient to expand a central portion of the stent;  
continuing inflating the inner balloon to a pressure sufficient to burst the inner balloon  
inflating the outer balloon to a pressure sufficient to implant the stent; and  
deflating and removing the balloon catheter.
  14. The method according to claim 13, wherein the step of inflating the inner balloon to a pressure sufficient to expand a central portion of the stent implants the central portion of the stent and said step of inflating the outer balloon to a pressure sufficient to implant the stent implants the ends of the stent.

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15. The method according to claim 13, wherein the outer balloon has a length longer than the stent and the inner balloon(6) has a length shorter than the stent.
  16. The method according to claim 14, wherein a burst pressure of the outer balloon is over approximately 10 atmospheres and a burst pressure of the inner balloon is less than approximately 5 atmospheres.
  17. A method of implanting a stent, comprising:  
mounting a stent on a balloon catheter with an outer balloon with a length longer than the stent and an inner balloon with a length shorter than the stent, the outer balloon overlaying the inner balloon, a burst pressure of the inner balloon being substantially less than a burst pressure of the outer balloon;  
delivering the balloon catheter and stent to a desired location in a vessel in a body;  
inflating the inner balloon to a pressure sufficient to expand the stent;  
continuing inflating the inner balloon to a pressure sufficient to burst the inner balloon;  
inflating the outer balloon to a pressure sufficient to implant the stent; and  
deflating and removing the balloon catheter.
  18. The method according to claim 17, wherein the step of inflating the inner balloon to a pressure sufficient to expand the stent expands and implants the central portion of the stent and said step of inflating the outer balloon to a pressure sufficient to implant the stent implants the ends of the stent.

19. The method according to claim 17, wherein a burst pressure of the outer balloon is over approximately 10 atmospheres and a burst pressure of the inner balloon is less than approximately 5 atmospheres.
20. A method of implanting a stent, comprising:  
expanding the central area of the stent with a first balloon;  
bursting the first balloon; and  
then expanding the ends of the stent with a second balloon.
21. The method of claim 20 wherein said first balloon comprises an inner balloon disposed inside said second balloon comprising an outer balloon.

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